

**AMENDMENTS TO THE CLAIMS**

*Please amend the Claims as follows:*

Claims 1-26 (canceled).

**27. (Canceled).**

**28. (Canceled).**

**29. (Canceled).**

**30. (Canceled).**

**31. (Canceled).**

**32. (Canceled).**

**33. (Currently Amended)** An article of manufacture comprising having computer readable program code embodied therein which implements a method for compiling a structured document schema into type annotation records, said computer readable program code comprising:

- a. computer readable program code building a type hierarchy ordered tree from structured document based on a derivation of relations among types in said structured document and determining one or more tuples for each type record in said structured document;
- b. computer readable program code forming a complete typing set of said tuples;
- c. computer readable program code sorting said typing set by their first field;
- d. computer readable program code creating, from sorted tuples in (c), ambiguity typing sequences for tuples having a common first field and having a unique second field, collecting and sorting a third field from ambiguity typing sequences, assigning a unique offset number to each sorted third field, and arranging said ambiguity typing sequences based on offset numbers;

- e. computer readable program code creating a typing array by concatenating typing tuples in resulting ambiguity typing sequences of (d);
- f. computer readable program code for each type record node, N, in created typing array, if the intersection of a set of tuples in N with any ambiguity typing sequence is not empty, then replacing first typing tuple in N by typing tuple having offset, wherein offset represents a position of an ambiguity type in a given ambiguity typing sequence;
- g. computer readable program code creating a type indexing data structure and indicating ambiguity type for each type name; and
- h. computer readable program code ~~outputting writing~~ said created index structure to storage.

**34. (Original)** The article of manufacture of claim 33, wherein said structured document schema is an XML document schema.

**35. (Canceled)**

**36. (Original)** The article of manufacture of claim 33, wherein said index structure is any of the following: hash table, binary tree, or B+ tree.

**37. (Canceled)**

**38. (Canceled)**

**39. (Currently Amended)** An article of manufacture comprising having computer readable program code embodied therein which implements a computer-based method for compiling a structured document schema into type annotation records, said computer readable program code comprising steps of:

- a. computer readable program code building a type hierarchy ordered tree from XML document schema based on a derivation of relations among types in said structured document and determining one or more tuples for each type record in said structured document
- b. computer readable program code forming a complete typing set of said tuples;
- c. computer readable program code alphabetical sorting said typing set by their first field;
- d. computer readable program code creating, from sorted tuples in (c), ambiguity typing sequences for tuples having a common first field and having a unique second field, collecting and sorting a third field from ambiguity typing sequences, assigning a unique offset number to each sorted third field, and arranging said ambiguity typing sequences based on offset numbers;
- e. computer readable program code creating a typing array by concatenating typing tuples in said resulting ambiguity typing sequences of (d);
- f. computer readable program code, for each type record node, N, in created typing array, if the intersection of a set of tuples in N with any ambiguity typing sequence is not empty, then replacing first typing tuple in N by typing tuple having offset, wherein offset represents a position of an ambiguity type in a given ambiguity typing sequence;
- g. computer readable program code creating any of the following type indexing data structures and indicating ambiguity type for each type name: hash table, binary tree, or B+ tree; and

h. computer readable program code outputting said created index structure.

**40. (Canceled)**

**41. (Original)** The computer-based method of claim 39, wherein said computer-based method is implemented in a database.